

Pat nt Claims

1. Process for holding and insulating said ceramic monoliths (1, 2) in a said motor vehicle exhaust gas unit (20), with a said housing (3) (pipe or half shells) preferably having a nonround (e.g., oval or triangular) cross section and with one or more said inner ceramic monoliths (1, 2) of a corresponding cross section, wherein a said mounting mat (4) is wrapped around the ceramic monolith and is mounted in the said housing (3) and the said mounting mat (4) may have at least one said swelling mat (5, 6), which is a mixture of ceramic fibers, expanded mica and organic binder,
- characterized in that
- the said mounting mat (4) and/or the said housing (3) is treated chemically and/or structurally for minimizing the erosion at least in the said areas at risk of erosion (A) or in the areas in which damage has occurred.
2. Process in accordance with claim 1,
- characterized in that
- the said mounting mat (4) has a multilayer design consisting of at least two layers, wherein the material used for the individual layers is selected corresponding to the function of the layer during the operation for minimizing the erosion of the said mounting mat (4) as a whole and/or is cut in the proper configuration.
3. Process in accordance with claim 2,
- characterized in that
- fiber felts and/or fabric mats which are assigned to at least one of the following materials or product groups are used as the temperature- and oxidation-resistant individual mats of the said mounting mat (4):
- Leached glass

- quartz glass
- aluminum oxide
- mixtures of aluminum oxide and silica
- certain boron and/or zirconium contents.

4. Process in accordance with claim 2 or 3,
characterized in that
an individual mat consisting of said ceramic fiber fabric (20) is used as the preferably inner layer
of the said mounting mat (4) facing the said housing (3).

5. Process in accordance with one of the claims 2 through 4,
characterized in that
a said wire mesh (21), which is cut narrower preferably in the axial extension of the mount than
the rest of the said mounting mat (4), is used as the inner support of the said mounting mat (4).

6. Process in accordance with one of the claims 2 through 5,
characterized in that
said local erosion-minimizing areas of thickened material (22, 23) are introduced into or applied
to the individual mat, wherein the individual mat may have said indentations or perforations (24),
which fit the areas of thickened material in a positive-locking manner, in the area in which the
said areas of thickened material (22, 23) are introduced or applied.

7. Process in accordance with one of the claims 2 through 6,
characterized in that
fibers with a thickness of 6 to 12 μm are used in the individual mats.

8. Process in accordance with one of the claims 2 through 6,
characterized in that

a swelling mat is used as the individual mat.

9. Process in accordance with claim 8,
characterized in that
a combination of said swelling mat and fiber mat sections (5, 6) arranged one behind the other is
used as the individual mat, wherein the connection joint of the individual swelling mat and fiber
mat sections has a said wavy shape (11).
10. Process in accordance with one of the claims 1 through 9,
characterized in that
the individual mat or the said mounting mat (4) is impregnated in the said areas at risk of erosion
(A) before being wrapped around the said ceramic monoliths (1, 2), wherein the impregnation is
performed on the side of the mat facing the monolith with diluted, heat-resistant adhesives,
which are made able to penetrate with a wetting agent and are assigned to at least one of the
following product groups:
- Colloidal solution of silicic acid dissolved in water,
 - water glass,
 - alkali siliconates, e.g., potassium methyl silicate,
 - monoaluminum phosphate solution, and
 - aluminum chromium phosphate solution.
11. Process in accordance with claim 10,
characterized in that
the adhesive is diluted during the impregnation to the extent that binder is present only in the
contact areas between the fibers and optionally between the fibers and the mica binder.
12. Process in accordance with one of the claims 1 through 11,
characterized in that

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the said mounting mat (4) is bonded to the said ceramic monolith (1, 2) and/or the said housing (3) with a temperature-resistant mat adhesive, wherein the mat adhesive is applied to the inside of the said housing (3) and/or to the said ceramic monolith (1, 2) and the said mounting mat (4) is inserted and is mounted wet in the said housing (3).

13. Process in accordance with claim 12,
characterized in that

a mat adhesive that is assigned to at least one of the following product groups is used:

- Colloidal solution of silicic acid dissolved in water,
- water glass,
- alkali siliconates, e.g., potassium methyl silicate,
- monoaluminum phosphate solution, and
- aluminum chromium phosphate solution.

14. Process in accordance with one of the claims 1 through 13,
characterized in that

the holding forces between the said mounting mat (4) and the said housing (3) are brought about in a specific manner by positive locking, especially by increasing the surface roughness, before or during the assembly of the said exhaust gas unit (20).

15. Process in accordance with claim 14,
characterized in that

the surface roughness is increased by milling or etching in said rough areas (14), optionally using a mat binder.

16. Process in accordance with one of the claims 1 through 15,
characterized in that

a said preassembled phenolic resin adhesive film (15) is arranged on the outside of the said

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mounting mat (4) and is inserted together with the mounting mat and is bonded on the inside of the said housing (3) during the operation of the exhaust gas unit during heating on the outside.

17. Mounting of at least one said ceramic monolith (1, 2) in a said, preferably nonround (e.g., oval or triangular) housing (3) (pipe or half shells) of a said motor vehicle exhaust unit (20) using a said mounting mat (4), which has at least one said swelling mat (5, 6), designed according to a process in accordance with claims 1 through 16,

characterized in that

the said mounting mat (4) is a multilayer mat tailored to the function during the operation of the said exhaust gas unit (20), wherein said different swelling mats (5, 6) (with expanded mica) and/or said fiber mats (7) (without expanded mica or without granular components) may be provided on the inside and on the outside.

18. Mounting in accordance with one of the claims 1 through 17,

characterized in that

the said fiber mat (7) of one said mounting mat (4) is designed as a shear-resistant mat.

19. Mounting in accordance with claim 18,

characterized in that

the said shear-resistant fiber mat (7) has said oblique felt fibers (8), which extend at a flat angle (α) of 5° to 60° from the said underside to the said top side (9 and 10, respectively), of the mat and the ends of the felt fibers are bonded on the interfaces or the said underside and top side (9, 10) of the mat.

20. Mounting in accordance with claim 19,

characterized in that

the said shear-resistant fiber mat (7) has fibers that are arranged in said loops (11) over the thickness of the mat, wherein the loops are in contact with and bonded on the said top side and

